

REMARKS/ARGUMENTS

The Examiner's Action of August 20, 2004, has been received and reviewed by counsel for Assignee. In that Action the Examiner objected to the drawings for reasons enumerated in paragraphs 1 and 2 of the Action, and rejected all claims under 35 U.S.C. § 102(e) as anticipated by *Fisher, et al.*, U.S. Patent 6,535,891. The Examiner noted the absence of references in the specification to three reference numerals, and to a reference numeral in the specification not shown in the drawings. By the above response, counsel has added the missing reference numbers to the specification, and corrected a typographical error in one reference numeral. These changes are believed to overcome the objections to the drawings.

Substantive Rejection

By this response counsel has amended the specification in a manner believed to overcome the rejections to the drawings, has canceled pending claims 1-9 and submits herewith new claims 10-23. These claims correspond closely with the previously-submitted claims; however, they have been rewritten to place them in better form, and to highlight the differences between the invention claimed there and the teachings of the *Fisher, et al.*, reference relied upon by the Examiner. A more detailed discussion of the amendments to the specification and distinctions with respect to the cited prior art follows.

With regard to the rejection of the claims, counsel has canceled claims 1-9, and re-presented them in a rewritten manner to more precisely define the claimed invention as new claims 10-23. The distinctions between the claimed invention and the cited reference are discussed next.

The Disclosed Invention

Generally speaking, this invention provides a file system particularly useful for storage systems in which many of the hard disk drives provided have different performance characteristics. Depending upon when a user system was purchased, additional storage was added, etc., it is not unusual for storage systems to have hard disk drives of various vintages, capacities, access times, etc. The invention herein provides a storage system in which a goal is to have data blocks which are frequently accessed be placed on higher speed disks, in contrast to data blocks that are less frequently accessed.

Preferably, this is achieved by checking, when a file having a data structure defined by an application is stored, a relationship between that data structure and a predefined data structured stored in the storage system. When these data structures coincide, the data in the file can be placed on a specific disk in response to the result of that comparison.

The Prior Art

This technique is not taught by the cited *Fisher, et al.*, reference. That reference teaches a storage system in which a location is provided for storing information about logical objects stored on the database. The storage system uses this mapping information to understand about logical objects and certain modifications occurring at given access frequency. The host device then can enable the number of object files regularly scanned for viruses to be set at a minimum by obtaining information about files having modifications made to them. In addition, the host device can average loads by collecting information about high access frequencies and moving files to locations geographically near an application which is being accessed or moving the file to a different host device on a distributed network.

The *Fisher, et al.*, reference does not teach Applicants' claimed invention. As counsel understands it, *Fisher, et al.*, does teach storing mapping information for managing correspondence relationships with a logical object, such as a file system or a database. In *Fisher, et al.*, the system uses this mapping information to understand that a logical object having certain modifications occurred. The data is stored on the hard disk drives 32 using small computer system interface commands, for example SCSI-2 or -3. The host device enables the number of object files regularly scanned for viruses to be set at a minimum by obtaining information about files having modifications and when they occurred. In addition, the host device can average the load by obtaining information about high access frequencies from the storage and moving the file to a location geographically nearer an application being accessed. In general, the approach is intended to enable the host to perform the most appropriate processing per file with this information on each file.

Thus, in essence, while this invention provides a file system for a physical device with difference performance, *Fisher, et al.*, does not provide any description of disk performance, and does not rely upon differences in various disks' performance. In addition,

while this invention enables a specified location to be used for each data block, *Fisher, et al.*, does not provide any description about locating particular files or data blocks.

Each of the independent claims now presented for examination, that is, claims 10, 22 and 23, includes a requirement that the storage system have a plurality of storage devices, some of which have a different performance characteristic than others, and requires that data blocks or other units of data be stored indifferent locations depending upon whether they match predetermined conditions or not. For these reasons, the claims now presented for examination are believed to patentably distinguish the cited reference, and therefore should be allowable.

If the Examiner believes a telephone conference would expedite prosecution of this application, he is invited to telephone the undersigned at 650-326-2400.

Respectfully submitted,



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